IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Nobuaki Ema
Serial No. : 09/933,691
Filed : August 21, 2001
Title : OPTICAL COMPONENT MEASUREMENT APPARATUS AND METHOD OF TESTING OPTICAL COMPONENT

Art Unit : 2877
Examiner : Gordon J. Stock, Jr.

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF AUGUST 8, 2003

Claims 1 and 5 are pending.

In reply to the Office Action of August 8, 2003, Applicant submits the following remarks.

Claims 1 and 5 were rejected as unpatentbale over the combination of Applicant's admitted prior art (AAPA) in view of U.S. Patent No. 6,024,498 (Carlisle et al.) further in view of U.S. Patent No. 4,830,490 (Kakii et al.) and further in view of U.S. Patent No. 4,749,275 (Shimomura et al.).

Applicants respectfully disagree for at least the following reasons.

1. (Previously Presented) An optical component measurement apparatus which inputs a measurement optical signal originating from a measurement light source into an optical component under test and which measures an optical output signal output from the optical component, the apparatus comprising:

a measurement unit for measuring an optical output signal output from the optical component;

a first optical fiber which is connected to an input terminal of the optical component under test and inputs the measurement optical signal to the optical component;

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a second optical fiber which is connected to an output terminal of the optical component under test and transfers, to the measurement unit, an optical output signal output from the optical component under test; and

a position controller for adjusting relative positions between the first optical fiber, the second optical fiber, and connection sections of the optical component under test such that an optical signal level measured by the measurement unit becomes maximum,

wherein the optical component under test has a plurality of output terminals, **the measurement unit has a plurality of photodetectors which detect optical output signals output from the plurality of output terminals of the optical component under test**, and measurement equipment connected to the plurality of photodetectors, and the plurality of output terminals of the optical component under test are connected to corresponding photodetectors by way of corresponding second optical fibers,

wherein the measurement unit is further provided with a switch for connecting the plurality of photodetectors to the measurement equipment in a switchable manner, and

wherein the measurement unit further comprises a display device for displaying a result of measurement performed by the measurement equipment. (Emphasis Added)

Applicant respectfully submits that the above bolded features are not taught or suggested by the prior art references for at least the following reasons.

To establish a prima facie case of obviousness, three basic criteria must be met including that the prior art reference (or references when combined) must teach or suggest all the claim limitations. (See MPEP 2143.01 Suggestion or Motivation to Modify the References)

Applicant respectfully asserts that the prior art references fail to teach all the claim limitations. For example, the Kakii reference (FIG. 2) shows a system having a first optical fiber 23, a second optical fiber 22, and a photosensor 28 coupled to a bare side portion of the second optical fiber 22 through a glass rod 19. In operation, a light beam is transmitted into first fiber 23 and any light that is leaked from the bare side portion of the second fiber 22 is detected by the photosensor 28 through the glass rod 19. Although the Kakii system measures leaked light from the second fiber, the Kakii system does not teach a measurement unit having "a plurality of photodetectors which detect optical signals **output** from the plurality of output terminals of the optical component under test" as recited in claim 1.

Applicant further respectfully points out that to establish a prima facie case of obviousness, three basic criteria must be met including that there must be some suggestion or

motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. (See MPEP 2143.01 Suggestion or Motivation to Modify the References) The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). That is, the fact that the reference can be combined or modified is not sufficient to establish prima facie obviousness.

Applicant respectfully asserts that one skilled in the art would not have been motivated to combine the prior art references to arrive at the claimed invention for at least the following reason. The Office action asserts that the Kakii reference teaches an apparatus for aligning optical fibers that power meters are used with photodetectors. (See the background section of the reference, column 1, lines 25-35). The Office action goes on to state that it would have been obvious to one skilled in the art at the time the invention was made that when the optical component has a plurality of output terminals and power meters for each output terminal it would have a plurality of photodetectors associated with each power meter in order for the power meter to display the light levels detected by the associated photodetector. Applicant respectfully disagrees for at least the following reasons.

Although the background section of the Kakii reference mentions a power meter (See column 1, lines 25-35), however, it goes on to explain that such a system has a major drawback: "such a system is not economical because it requires the connection of a power meter to the photodetector." (See column 1, lines 36-38). To overcome this problem in the art, the detailed section of the Kakii reference discloses a system that uses a photodetector but does **not** use a power meter. That is, the Kakii reference teaches away from using a power meter because. For example, for one reason, an important purpose of the Kakii reference is to eliminate the use of measurement equipment including a power meter. As a result, one skilled in the art would **not** have been motivated to use a power meter or measurement equipment with an alignment system. Thus, one skilled in the art would not have been motivated to combine the Kaki reference with the prior art references for at least this reason.

Therefore, it would not have been obvious to combine the prior art references to arrive at the claimed invention for at least this reason.

Moreover, it would not have been obvious to combine the prior art references for at least the following additional reasons. For example, the Carlisle reference is cited for mentioning that maximum signal transfer (minimum insertion loss) is a function of alignment of fiber cores. (See column 1, lines 24 to 30). However, the Carlisle reference is directed to **mechanical** alignment of connector assemblies (See abstract). In contrast, the claimed invention is directed to a technique for **measuring** an optical signal from optical component. That is, the Carlisle reference describes mechanical means of coupling optical fibers but fails to mention any technique for measuring an output signal. The Kakii reference, as explained above, is directed to a technique for measuring "leaked" light from a side portion of a fiber optic and discourages the use of measurement equipment. Next, the Shimomura reference is cited for disclosing an optical power meter system using a switch to switch between detectors of varying wavelength sensitivity characteristics. (See column 1, lines 39-50; column 4, lines 15-30) However, the Shimomura reference discloses a technique that is **not** capable of measuring the output from two signals because it employs a structure having a comparator and a switch for handling two signals S1 and S2. Referring to FIG. 1 of the Shimomura reference, a comparator 26 generates an output signal based on which of the two signals S1 and S2 have a larger value. This output signal is used to control a switch 28 for selecting the signal with the largest value. (See column 3, lines 42-65) That is, only one of the two signals S1, S2 is actually sent to a power meter 29 to be actually measured.

Therefore, it would not have been obvious to combine the prior art references to arrive at the claimed invention for at least this additional reason.

Claim 5 recites a method of testing an optical system corresponding to the apparatus for testing an optical system as recited in claim 1. Claim 1 should be allowable for the reasons above. Accordingly, claim 5 should be allowable for at least the same reasons as claim 1 above.

In conclusion, Applicant respectfully requests withdrawal of the rejections and allowance of the application.

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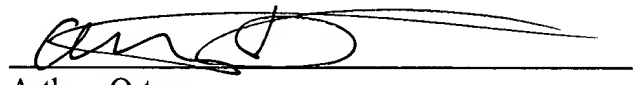
Respectfully submitted,

Date: 11/6/03



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